NOTES ON THE BOTANY OF THE INTERIOR OF NEW SOUTH WALES.

By R. H. Cambage.

(Plates xx.-xxi.)

Part IV.—From Mount Hope to Parkes.

The road taken from Mount Hope to Condobolin was across Wirchilleba, Eremeran, and part of Melrose Stations, keeping back from the Lachlan River all the way.

In passing between Mount Allen and Double Peak, which are two hills situated about four miles apart, it was noticed that on the former there was a considerable quantity of *Casuarina quadrivalvis* (She Oak), but not a single tree of it was found on the latter. *Sterculia diversifolia* (Currajong) was also much more plentiful on the former than on the latter. On the other hand, *Acacia doratoxylon* (Currawong) was found covering the heights of Double Peak, its straight stems standing out against the sky-line along the top of the ridge giving it the well known hog's-neck appearance; while on Mount Allen the species does not appear to be represented at all. The formation of Mount Allen is igneous, apparently porphyry, while that of Double Peak, also known as Dromedary, is Silurian slate, with a few belts of porphyry.

Various trees and shrubs noticed between Double Peak and Wirchilleba Homestead were:—*Callitris robusta* (White or Cypress Pine), *Heterodendron oleæfolium* (Rosewood), *Fusanus acuminatus* (Quandong), *Hakea leucoptera* (Needlewood), *Bertya Cunninghamii* (Broom Bush), *Bossiæa* sp., *Triodia irritans*

(Spinifex), growing in the Mallee scrub, *Myoporum deserti* (Dogwood), *Callitris verrucosa* (Spreading Pine), *Apophyllum anomalum* (Currant or Warrior Bush), *Dodonæa viscosa*, var. *attenuata* (Hopbush), *Capparis Mitchelli* (Wild Orange), *Cassia eremophila*, *Eremophila longifolia* (Emu Bush), *E. Mitchelli* (Budtha), *Geijera parviflora* (Wilga), and the large climber, *Lyonsia eucalyptifolia*.

In one place the Cypress Pine was found forming a dense almost impenetrable scrub extending along the road for 3 or 4 miles.

The Acacias noticed were:—*A. homalophylla* (Yarran), *A. Oswaldi*, *A. aneura* (Mulga), *A. doratoxylon*, *A. hakeoides* (sometimes called Black Wattle), *A. Burkittii* (Kangaroo Bush), and *A. decora* (Silver Wattle).

The Eucalypts were represented by *E. populifolia* (Bimble Box), *E. intertexta* (Gum or Yellow Box), *E. viridis* (Narrow-Leaf or Whipstick Mallee), *E. oleosa*, and *E. dumosa*, the last two forming a Mallee scrub for several miles. In this scrub *E. intertexta* was noticed in some instances assuming the Mallee form, having short stems and several from one root, but this is rather an unusual feature with this species. On a creek near the Homestead is *E. rostrata* (River Red Gum).

Between Wirchilleba and Eremeran Homesteads the vegetation continues much the same, as will be seen by the names of the following trees and shrubs which were passed, there being *Callitris robusta*, *Dodonæa viscosa*, var. *attenuata*, *Hakea leucoptera*, *Apophyllum anomalum*, *Heterodendron oleæfolium*, *Eremophila Mitchelli*, *E. longifolia*, *Geijera parviflora*, *Sterculia diversifolia*, *Cassia eremophila*, *Eriostemon difformis*, *Scævola spinescens*, *Bossiæa* sp., among the Mallee, *Myoporum deserti*, *Pittosporum phillyræoides*, *Olearia* sp., *Exocarpus cupressiformis* (Native Cherry), and *Tecoma australis* (Bignonia).

Close to Wirchilleba is a shrub with sticky leaves, and in appearance something like *Eremophila Mitchelli* (previously mentioned in Part ii., p. 709).

Casuarina quadrivalvis was found growing near Eremeran Homestead, where the formation for some miles is granite.

Near here also is *C. Luehmanni*, Baker (Bull Oak), the first met with in coming from Bourke. This tree has an extensive range, and is very common in the Forbes to Dubbo districts. Although it does not appear to grow in the direct line between Bourke and Euabalong, yet to the east of this line it extends north and south, covering a strip of country at least 100 miles wide, and finally going north-west to Barringan (R. T. Baker) on the Queensland border. Its easterly course is stopped as soon as the cold highlands are approached, it being a distinctly warm country species. The most eastern points are reached by its creeping up along the valleys of the large rivers. Near the Lachlan there are a few trees on Neila station, six miles south-east of Cowra. Along the elevated parts of the Macquarie it may be found in limited quantities between Hill End and Bathurst, but its highest point is reached above the latter place, at one mile east of O'Connell; on the south side, and close to the Fish River, there are about a dozen stunted trees growing on a granite bluff. The specimens collected had only fruit in a very young stage, but the whole of the evidence available, including bark and wood, points to the conclusion that they have been properly identified. The land around is occupied, and it is likely that before long the species will be extinct in this locality. In no other place have I found it growing at an altitude exceeding 2,000 feet above sea level, and seldom above 1,500 feet. The fact of these trees being stunted may be accounted for by their being in a climate too cold for them; but whether they are the remnants of a former luxuriant growth in this locality or simply a few stragglers outside their regular limit, are questions which cannot be answered without considerable investigation It is fully 25 miles down the river from O'Connell before any other trees of Bull Oak are found, though possibly others may have existed before the country was cleared.

In many localities *C. Luehmanni* grows near *C. Cambagei* (Belah), but is easily distinguished from that species by its rougher bark, thicker branchlets, smaller fruits, and more especially its timber, which is full of medullary rays, that of Belah showing

practically none. In old trees of Bull Oak the rough corky bark often falls off, thus giving the trunk a somewhat smoother appearance.

In comparing the figure caused by the medullary rays in wood from two species, it is necessary that the trees from which the specimens are taken should be of about the same size, or the results may be misleading. Thus a large tree of *C. Luehmanni* will show broader rays than a small tree of *C. quadrivalvis* and vice versâ.

The fruits of Bull Oak may generally be identified by their having both ends flat, the cone itself being made up of three rings or whorls of seeds. It usually happens that in the flowering stage some of the ovules escape being fertilised, and consequently do not grow, the result being that the rings present a notched or unfinished appearance. In the Lachlan district the fruits mature about the month of January.

Recently I found *C. Luehmanni* in Victoria and South Australia, though previously it had not been recorded outside of New South Wales. The circumstances surrounding this discovery are somewhat unusual. Arriving at Serviceton at 11 p.m., and having to wait four hours for the next train, I decided to have a look at the flora, notwithstanding the lateness of the hour and the absence of the moon. After going about half a mile, I saw the outline of a tree top appearing in the star-light. While standing under it, feeling the bark, a slight breeze suddenly stirred the foliage, and from that well known murmuring sound came the assurance that the tree was a Casuarina. After searching a few more trees, mature fruits were found, which proved the species to be *C. Luehmanni*. Serviceton is in Victoria, close to the South Australian boundary, but subsequently I found that the species extends about 12 miles into the latter State, while it is within sight of the railway for many miles in Victoria, near Horsham, Murtoa, Lubeck, &c.

It thus extends, somewhat in a semicircle, from South Australia, across the north-west corner of Victoria, right through New South Wales, and possibly a short distance into Queensland.

After finding the Bull Oak at Serviceton, I continued my search and found another species, specimens of which were handed to Mr. J. G. Luehmann, F.L.S., Curator of the National Hebarium, Melbourne, who informed me that this second tree was *Eucalyptus odorata*, Behr., not previously (except erroneously) recorded for Victoria. The species which had been incorrectly identified as *E. odorata* is *E. Bosistoana*, F.v.M. *E. odorata* would, if found in New South Wales, certainly be called a Box-tree, as it looks like a stunted form of *E. Woollsiana*, though its wood appears slightly browner. It is plentiful on the hills near Adelaide, and is known as Peppermint.

On returning to the station, a railway officer informed me that there were only two kinds of trees within five or six miles of Serviceton, viz., Bull Oak and Box; beyond that there were some Mallees. From this it will be seen that by the merest accident I had found both the local species, and neither had been recorded for this locality.

The Acacias noticed between Wirchilleba and Eremeran were:—*A. Oswaldi*, *A. homalophylla*, *A. calamifolia*, *A. doratoxylon*, *A. aneura*, *A. colletioides*, *A. dealbata* (green variety), *A. decora*, and *A. excelsa*.

Acacia calamifolia, *A. aneura*, *A. excelsa*, and *A. colletioides* were not seen east of Eremeran, so that probably this is about their eastern limit between the Bogan and Lachlan.

For about 50 miles *A. aneura* (Mulga) has not been plentiful, occurring only in patches and becoming less, thereby indicating that the species has been spreading south-easterly from its stronghold in the north-west. Its distribution, however, is probably nearly over, as, being such an excellent fodder tree for sheep, the young plants are eaten off at an early stage. In the absence of other timber, Mulga is now one of the principal trees burnt for charcoal near Cobar.

Acacia excelsa was represented by a cluster of six trees on the south side of the road, opposite a dam near the western boundary of Eremeran Holding. The leaves were narrower than usual. A station-hand stated that he knew of no other such trees, and that

they had no local name. In the northern districts they are known as Ironwood, but near here that name appears to be applied to large trees of *Heterodendron oleæfolium*. Eremeran is probably the most easterly locality for *A. excelsa* south of the Bogan.

The Eucalypts noticed were:—*E. populifolia*, *E. viridis*, *E. rostrata* (on creeks), *E. tereticornis*, var. *dealbata* (Gum), *E. intertexta*, and near Eremeran, *E. Woollsiana* (Box).

On Wirchilleba *E. intertexta* appears to be known chiefly as Yellow Box and Gum, and on Eremeran as Red Box.

Between Eremeran and Mount Tinda, viâ Vermont Hill, there are *Casuarina Luehmanni*, *C. Cambagei*, *Eremophila Mitchelli*, *E. longifolia*, *Heterodendron oleæfolium*, *Sterculia diversifolia*, *Apophyllum anomalum*, *Hakea leucoptera*, *Myoporum deserti*, *Callitris robusta*, *Pittosporum phillyræoides*, *Templetonia* sp., (without flowers), *Geijera parviflora*, *Dodonæa* sp., *Fusanus acuminatus*, *Bertya Cunninghamii*, *Tecoma australis*, *Cassia eremophila*, and *Canthium oleifolium*.

Although this last-mentioned species has a fairly wide distribution, it does not appear to grow in great quantities anywhere, but is found at intervals in small patches, and is one of the plants known as Lemon Bush.

The Acacias noticed hereabouts were:—*A. decora*, *A. dealbata* (green variety), *A. Oswaldi*, *A. hakeoides*, *A. Burkittii*, and *A. homalophylla*.

A. Burkittii was found a little west of where the Eremeran road meets the main road from Nymagee to Condobolin, or close to Vermont Hill. It was not seen afterwards, so that this is probably about its eastern limit, at least south of the Bogan. Until mentioned in Part i. of these Notes this species was not previously recorded for New South Wales. Subsequent papers show its extension from about 40 miles north of Cobar to about 50 miles north-west of Condobolin. In the Nymagee district it is sometimes known as Kangaroo Bush, and Cherrypickera was given me as an aboriginal name, but I had no opportunity of verifying it.

The Eucalypts between Eremeran and Mount Tinda are:—*E. tereticornis*, var. *dealbata* (on granite), *E. populifolia*, *E. intertexta*, *E. Woollsiana*, *E. rostrata* (on creeks only), *E. oleosa*, *E. dumosa* and *E. viridis*.

In coming from Bourke and following the route described in these papers, Vermont Hill was the first place met with in which wheat growing was being carried on to any extent, several settlers here having good areas under crop.

Just south of Vermont Hill are miles of Mallee, extending away south-westerly. The same scrub is met on Palisthan Holding, and again between Mount Hope and Euabalong, quite 50 miles away. I cannot say that it is continuous, but such is probably the case, as it has been met with wherever I have crossed that belt of country. *E. oleosa* and *E. dumosa* predominate throughout.

Mount Tinda is composed of granite and porphyry, and covered chiefly with *Eucalyptus tereticornis*, var. *dealbata*, and *Callitris robusta*. I obtained here some interesting specimens of felspar crystals (orthoclase).

From Mount Tinda to Condobolin is about 40 miles south-easterly. Copper and gold mining are being carried on at different points along the route. Various trees and shrubs passed were:—*Geijera parviflora*, *Pittosporum phillyræoides*, *Heterodendron oleæfolium*, *Apopyhyllum anomalum*, *Callitris robusta* (all the way), *Bossiæa* sp., *Triodia irritans*, *Myoporum deserti*, *Eremophila Mitchelli*, *E. longifolia* (getting scarce), *Hakea leucoptera*, *Bertya Cunninghamii*, *Sterculia diversifolia*, *Lyonsia eucalyptifolia*, and *Callitris verrucosa*. After passing Mount Nobby, where the formation is porphyry and slate, there were, in addition to many of the former, *Tecoma australis*, *Cassia eremophila*, and *Fusanus acuminatus*. After reaching the Melrose road, at 24 miles from Condobolin, the following were noted:—*Eriostemon difformis*, *Hakea leucoptera*, *Myoporun deserti* (at 19 miles), *Casuarina Cambagei* (18 m.), *C. Luehmanni*, *Hakea leucoptera* (plentiful), (15 m.), *Exocarpus aphylla* (7 m.), *Geijera parviflora*, *Sterculia diversifolia*, *Eremophila Mitchelli* (4 m.), *Casuarina quadrivalvis*, and *Canthium oleifolium*.

The Acacias noticed between Mount Tinda and Condobolin were:—*A. homalophylla*, *A. dealbata* (green variety), *A. Oswaldi*, *A. decora* (chiefly on porphyry), *A. doratoxylon*, and near the Lachlan at Condobolin *A. salicina* (Cooba or Native Willow) and *A. pendula* (Boree or Myall).

The Eucalypts observed were :—*E. populifolia*, *E. oleosa*, *E. dumosa* (as a Mallee scrub with *E. sideroxylon* (Ironbark), along the edge of it), *E. Woollsiana*, *E. tereticornis*, var. *dealbata* (with partially-double operculum, near Mount Nobby), *E. viridis* and *E. intertexta*. After reaching the Melrose Road at 24 miles from Condobolin, the Eucalypts passed were as follows :—*E. populifolia* (all the way), *E. intertexta* (scarce), *E. Woollsiana* (all the way), (21 m.), *E. oleosa* (8 m.), *E. tereticornis*, var. *dealbata*, *E. dumosa* (7 m.), a few trees of *E. intertexta* (6 m.), *E. oleosa* (fairly large), *E. sideroxylon* (4 m.), one tree of *E. intertexta*, and *E. tereticornis*, var. *dealbata*.

Finding *E. sideroxylon* and *E. Woollsiana* growing together between the 3- and 4-mile posts, I searched for the supposed hybrid or Ironbark Box, and succeeded in finding a few trees on the eastern side of the road. None were growing within sight from the road, and had their presence not been suspected, they would have been passed unnoticed. They were in every respect similar to those found north of Nymagee and mentioned in a previous paper (Part ii.) These trees can generally be at once detected by their bark, it being rougher than the Box and smoother than the Ironbark, and usually is somewhat of a yellowish-brown colour, especially towards the upper part of the trunk.

On the Lachlan, close to Condobolin, *Eucalyptus rostrata*, *E. melliodora*, and *E. largiflorens* were noticed.

Just above Condobolin are trees of *E. largiflorens* and *E. Woollsiana* growing together, and undoubtedly a casual observer would class them as the same species. In this particular case the leaves of both are rather pale, and do not present the usual contrast that is to be noticed between these trees. A little inspection, however, soon reveals the distinction in the bark on

the branches, those of *E. Woollsiana* being clean, while those of *E. largiflorens* are rough.

The tree of *E. intertexta*, noticed about 3½ miles north of Condobolin, marks the most south-easterly point at which I have found this species.

From the Melrose Road, at 29 miles north-westerly from Condobolin to Bulbodney Creek, near Jumble Plains Homestead, at about 20 miles south-west of Dandaloo on the Bogan, is north-easterly about 40 miles. There is scarcely a house to be seen the whole way, and the general character of the vegetation may be understood from the names of the following trees and shrubs which were noticed. These were :—*Geijera parviflora*, *Callitris robusta*, *Eremophila Mitchelli*, *Heterodendron oleæfolium*, *Hakea leucoptera* (all these continuing practically the whole way), *Cassia eremophila*, *Sterculia diversifolia*, *Dodonæa viscosa*, var. *attenuata*, *Apophyllum anomalum*, *Bertya Cunninghamii*, *Fusanus acuminatus*, *Exocarpus cupressiformis* (Native Cherry), *E. aphylla*, *Pittosporum phillyræoides*, *Myoporum deserti* (37 m. from Dandaloo), *Grevillea floribunda*, R.Br. (a shrub flowering in June), *Melichrus urceolatus*, R.Br., (a shrub with flowers in June), *Eriostemon difformis*, *Celastrus Cunninghamii*, *Leptospermum* sp. (Tea-tree), and *Micromyrtus microphylla*, Benth., a little shrub with an abundance of short leaves and small flowers.

A little nearer Dandaloo, towards Albert Waterholes, is *Callitris calcarata*, R.Br., known in various localities as Mountain Pine, Black Pine, and Green Pine. It generally grows on hills, and has black bark and green foliage. Its timber is not much esteemed.

At about 30 miles south-west of Dandaloo, and near this bush track, the White Pine, *Callitris robusta*, has evidently not been much used, as there is a considerable quantity of fine trees.

The Casuarinas noted were :—*C. quadrivalvis*, *C. Luehmanni*, and *C. Cambagei*, the last two being strongly represented.

The Acacias were *A. doratoxylon*, *A. dealbata* (green variety), *A. Oswaldi*, *A. homalophylla*, *A. decora*, *A. hakeoides*, *A. triptera* (Wait-a-while), and *A. pendula*.

Acacia Oswaldi has a very wide range, but at the same time it is never found in great quantities. I have never found it forming scrubs, and usually each tree grows by itself, often the nearest of the same species being several hundred yards away. The stem is generally less than six inches in diameter and very hard, being a favourite for stockwhip handles, and generally useful where toughness is required. The leaves terminate in short spines, which have earned for the tree the unsuitable name of Dead Finish, the inference being that a traveller entering a cluster of these trees would suddenly find his journey finished owing to the resisting nature of these spikes. Even if this species formed scrubs, the leaves are harmless compared with those of many others. It is probable that the name properly belongs to some other tree, and has been applied to this one by mistake. Still I found it used over a very large area. About half-way between Condobolin and Dandaloo it is known by some as Gidgea, its value for stockwhip handles having probably caused it to be confused with the Bourke species of the same name, *A. Cambagei*, which is famous over most parts of the colony among stockmen.

A. pendula was found in one place only, at about 31 miles from Dandaloo, growing on a small patch of black soil among gilgais.

A. triptera was seen near Wilmatha Hill, about 40 miles north of Condobolin, growing with one stem, but spreading to 8 or 10 feet across the top. Its curved, pointed leaves have suggested the name of Wait-a-while, as they decidedly impede locomotion. The species was not found east of this point, and probably does not much exceed it south of the Bogan.

The Eucalypts noted along this road were :—*E. populifolia*, *E. sideroxylon* (in patches), *E. Woollsiana*, *E. tereticornis*, var. *dealbata*, *E. viridis*, *E. intertexta*, *E. melliodora* (Yellow Box), a little of *E. oleosa*, *E. dumosa*, and *E. rostrata*.

E. intertexta ceases at about 35 miles north of Condobolin, and easterly from that point is not seen again, though it extends northerly. In the Bogan and Lachlan country its eastern margin may be approximately fixed by a line joining Mullengudgery and Condobolin. It goes south-westerly into South Australia, as I

have seen it at Tintinarra in the Ninety Mile Desert. There it grows as a fairly smooth white-barked tree, with red interlocked wood. The trees are smaller than those in the Cobar and Nymagee districts, though they do not grow as Mallee, and are often known as Desert Gum. In outward appearance it resembles *E. leucoxylon*, F.v.M., which grows with it in the desert, but has a yellowish wood.

The Mallees were not so plentiful in this locality, as they were to the westward, *E. oleosa* and *E. dumosa* not being seen east of Jumble Plains.

E. melliodora was found only at about 34 miles south-west of Dandaloo. Most of the trees had smooth white bark. North of the Lachlan this is the most western locality in which I have found this species when growing away back from the river.

At about 26 miles south-west of Dandaloo *E. sideroxylon* was noticed in considerable quantities, and of better quality than usual.

E. rostrata was growing on Bulbodney Creek. The buds had a short operculum similar to that found on trees at Sandy Creek, south of Nymagee, and mentioned in a previous paper (Part iii.).

The next piece of country to be dealt with extends from Jumble Plains Homestead south-easterly to Trundle, being nearly 50 miles.

Various trees and shrubs noticed were:—*Callitris robusta* (which continues all the way), *Eremophila Mitchelli*, *Apophyllum anomalum*, *Myoporum deserti*, *Dodonœa* sp., *Pittosporum phillyræoides*, *Heterodendron oleœfolium*, *Bertya Cunninghamii*, *Hakea leucoptera*, *Cassia eremophila*, *Fusanus acuminatus* (on Burra Burra Holding), *Tecoma australis*, *Grevillea floribunda*, *Eremophila longifolia*, *Callitris calcarata*, *Melichrus urceolatus*, *Exocarpus cupressiformis* (at Bullock Creek), *Olearia* sp., *Sterculia diversifolia*, *Eriostemon difformis*, *Geijera parviflora*, *Solanum eremophilum* (15 m. from Trundle), *Exocarpus aphylla*, *Eremophila Mitchelli*, *Myoporum deserti*, *Hakea leucoptera*, *Sterculia diversifolia*, *Heterodendron oleœfolium* (12 m.), *Pittosporum phillyræoides*, and a few trees, 20 feet high, of *Santalum lanceolatum*.

The finding of *Santalum lanceolatum* (Blacks' Medicine Tree of South Bourke) at about 10 and 12 miles north-west of Trundle was a matter for surprise, as the species had not been seen along the road travelled since passing Cobar, nor was it afterwards noticed. It may be found, however, between Dandaloo and Trangie.

The formation near the 11-mile post from Trundle, or 23 from Bogan Gate, is Devonian, as proved by fossils found on the road-side.

The Casuarinas passed were :—*C. quadrivalvis*, *C. Cambagei*, and *C. Luehmanni*, the last-named being most plentiful and the first but sparsely represented.

The Acacias seen were :—*A. Oswaldi*, *A. hakeoides*, *A. decora*, *A. dealbata* (green variety), *A. amblygona*, *A. doratoxylon*, *A. conferta*, A. Cunn., *A. homalophylla*, and *A. implexa*. This last-named species comprised about half-a-dozen trees on the western side of a hill composed of a fine-grained granite, and situated a few miles east of Bullock Creek. It has been seen by me at only one point west of this, viz., Nymagee (*vide* Part iii.).

A. conferta was seen here for the first time on the road from Bourke, and was growing in patches, with a height of from 4 to 6 feet.

The Eucalypts noticed between Jumble Plains and Trundle were :—*E. populifolia*, *E. Woollsiana*, *E. sideroxylon*, *E. viridis*, *E. rostrata*, *E. conica*, Deane & Maiden, *E. melliodora*, *E. tereticornis*, var. *dealbata*, and the questionable hybrid, Ironbark Box.

E. rostrata was found on Bullock Creek. The buds were again egg-shaped, with the short operculum similar to those previously found on creeks.

E. melliodora was not plentiful, but increases to the eastward.

On the western boundary of Burra Burra Holding about half-a-dozen trees of the supposed hybrid, Ironbark Box were found. Again, they were growing among *E. sideroxylon* and *E. Woollsiana*.

On Bullock Creek *E. conica* was met with for the first time. This tree is sometimes called Fuzzy Box on account of the rough woolly nature of the bark, and Apple Box, owing to the bark

being somewhat similar to other trees called Apple. Near Cowra it has been pointed out to me as Woolly Butt, while Box and Apple are names applied to it in some instances. Around Gilgandra it is often called Broad-Leaf Box in contrast to *E. Woollsiana*, which in the north-west has generally narrow leaves. The leaves of *E. conica* in the Gilgandra district, north of Dubbo, are not particularly broad, but it often happens that trees are named from comparative qualities which they possess, as well as from extreme forms. The rough bark continues on the branches as well as on the trunk, and the tree has rather a pendulous habit. Its timber, which is not extensively used, is not so pale as that of *E. hemiphloia*, var. *albens*, F.v.M., and generally is more difficult to split. Settlers in the Grenfell and Toogong districts have stated to me that it is one of the most difficult trees they have to clear off the land, as it does not burn readily. This quality also must be taken as comparative, as *E. conica* generally grows among trees which are good burners. Usually it is found on the low land along the rivers and large creeks, and is decidedly rare on the hills.

Many of the above remarks, especially those which refer to bark, drooping habit, timber and habitat, might be applied by some to *E. largiflorens*, but the latter has a redder wood and distinct botanical differences. Although both might be termed River Box, there is this general difference, that *E. conica* grows along the upper portions of the western rivers and *E. largiflorens* along the lower parts, and on the Lachlan the two species just about overlap at Condobolin. *E. conica* is to be found at least on the Castlereagh, Macquarie, Bogan and Lachlan Rivers, as well as over the intervening country where there are valleys. I have never found it so far south as the Murrumbidgee. Nor is it to be seen towards the cold highlands of Orange or Crookwell. I have been unable to fix its western limit on the Lachlan, but have seen it near Condobolin, and I think near Euabalong some years ago.

E. viridis was last noticed on the Burra Burra Holding, which is about its most eastern locality south-west of the Bogan. It

occurs to the west and north-west of Dubbo, but is very rare to the east of a line joining Dubbo, Bogan Gate and Temora. Over the Macquarie and Lachlan country it is the most eastern of all the Mallees, and in approaching its habitat its presence is often indicated by the fact that the straight tough stems of these little trees may be seen on the carriers' wagons, where they are used as "twitch sticks" to tighten the ropes which fasten the loads.

Parkes is slightly over 30 miles south-easterly from Trundle, and between these towns the following trees and shrubs were noticed:—*Callitris robusta* (practically all the way), *Apophyllum anomalum*, *Casuarina Luehmanni* (plentiful), *Heterodendron oleæfolium*, *Myoporum deserti*, *Hakea leucoptera*, *Geijera parviflora*, *Casuarina Cambagei*, *Exocarpus aphylla*, *Dodonæa viscosa*, *Bertya Cunninghamii*, *Olearia* sp., (22 m. from Parkes), *Exocarpus cupressiformis* (21 m.), *Leptospermum* sp., *Grevillea floribunda*, *Melichrus urceolatus*, *Hibbertia sericea*, Benth., *Eremophila Mitchelli*, *Cassia* sp., *Callitris calcarata* (18 m.), *Eremophila longifolia* (15 m.), *Fusanus acuminatus*, *Casuarina Luehmanni* (11 m.), *Sterculia diversifolia* (5 m.), *Templetonia* sp. (without flowers), *Geijera parviflora* (2 m.), and *Eremophila Mitchelli*.

The Acacias noticed along the road were:—*A. homalophylla*, *A. Oswaldi*, *A. decora*, *A. hakeoides*, *A. dealbata* (green variety), *A. doratoxylon* (15 m.), *A. spectabilis*, A. Cunn., (the first seen; 10 m.), *A. pendula* (5 m.), *A. decora* (2 m.), and *A. Oswaldi*.

The patch of Myall between the 9- and 10-mile posts north-westerly from Parkes marks its most eastern locality in the Parkes district. Formerly it grew on a plain about half-way between Parkes and Forbes, but there is scarcely a living tree to be found there now.

At about 15 miles from Parkes, towards Trundle, there are a few trees of an Acacia which appears to be either *A. implexa*, or *A. melanoxylon*, but in the absence of both flowers and pods the species was not identified. I have never seen the latter so far west as this, and the former only on two occasions already mentioned. Either species seems out of place in the far west.

The Eucalypts between Trundle and Parkes were represented by *E. populifolia*, *E. Woollsiana*, *E. melliodora*, *E. sideroxylon* (24 m.), *E. conica* (23 m.), *E. tereticornis* (21 m.), *E. tereticornis*, var. *dealbata*, *E. sideroxylon* (one tree with red flowers in June; 15 m.), *E. hemiphloia* var. *albens* (White Box), *E. conica* (10 m.), *E. melliodora* (7 m.), *E. Woollsiana*, *E. populifolia* (2 m.), *E. Woollsiana* and *E. melliodora*.

The trees of *E. tereticornis* near the 22-mile post were the first typical ones seen in coming from Bourke. From this point easterly the species is not uncommon on the lowlands, the variety *dealbata* taking the hills (*vide* Part ii.).

E. populifolia has been seen practically all the way, but it ceases about six miles westerly from Parkes, and easterly of a line joining Parkes, Forbes and Temora the species is not found. Nor have I seen it east of a line joining Parkes and Dubbo.

Towards Parkes the leaves of *E. Woollsiana* are in many cases much broader than in the Nymagee district.

E. hemiphloia, var. *albens*, is the common White Box of the western slopes. It seems to prefer a climate between the extreme heat of the plains and the extreme cold of the mountains, so that its distribution, though extending very far north and south, is much more limited east and west. It practically extends all along the western side of the Great Dividing Range, but rarely is to be found on the higher parts of it excepting towards the north. It comes eastward among the mountains by following the valleys of such rivers as the Macquarie, Turon, Lachlan and Abercrombie, but only crossing from one to the other where the intervening hills are low. This is another of those western forms that comes across the Liverpool Range on to the coastal area near Scone, and is plentiful on the upper Hunter. As previously mentioned (Part iii.), its flowers are rich in honey, and on Moonan Brook (a tributary of the Hunter), the bees during the autumn obtain their supply chiefly from this species. As a line from Dubbo through Forbes to Temora roughly marks the eastern limit of *E. populifolia*, so a line from about Narromine through Temora to Corowa on the Murray approximately denotes the western margin of *E. hemiphloia*, var. *albens*. In its most western

localities it is generally found on the highest land, and in this way seems to push out further than would be the case if the country were all plains. In many cases towards its western or lower area it may be found growing in company with *E. Woollsiana*, and the two trees resemble each other considerably through both having bark of two colours, a grey box-bark on the trunk and clean whitish limbs, the latter colour very often coming down in both species on the upper part of the trunk. In outward appearance the resemblance ceases here, as *E. hemiphloia*, var. *albens*, has much larger fruits and broader leaves, which are generally pale and covered with a white powder, giving the trees in many cases a silvery appearance. *E. Woollsiana*, on the other hand, has dark green leaves, and in contrast to *E. hemiphloia*, var. *albens*, the White Box, is often called Black Box. On the western slopes of the Great Dividing Range, approximately from Mudgee southward into Victoria *E. hemiphloia*, var. *albens*, is seldom found growing at an altitude exceeding 2,000 feet above sea-level, and occupies only that part of the elevated country which is not subject to regular heavy falls of snow; or its eastern margin indicates the western edge of our regular mountain snowstorms. A few miles east of that line snow may be expected nearly every winter, while a few miles west of it some winters may pass without any snow falling there. In July, 1900, a severe fall extended many miles into the White Box country, and being most unusual, the branches of the trees were broken by the weight of the snow much more than is the case with those species growing in higher localities where heavy falls are regular. In going from Sydney across the Blue Mountains, the western plants proper need not be expected till trees of *E. hemiphloia*, var. *albens*, are found; after that there is a possibility of a distinct change in the flora at any time, so that this Eucalypt occupies an interesting position between the mountain and the plain. In geological formation it seems to slightly prefer igneous to sedimentary, being common on granite, porphyry and diorite, but when growing on sedimentary, such as Silurian or Devonian, it generally avoids the rocky situations, and grows chiefly on the alluvial formed by the wearing of surrounding hills, and may be termed an open forest

species. The typical *E. hemiphloia*, F.v.M., is more of a coast form, and though common on the Wianamatta Shale and igneous formations, it is less plentiful on the Hawkesbury Sandstone, and altogether is not so strongly represented in this State as the variety *albens*.

In coming from Cobar to Parkes I expected at some point to find *E. melanophloia*, Benth., the Silver-Topped Ironbark, but failed to do so. Its most southern locality, therefore, so far as I know, is around Narromine. Neither was *E. siderophloia*, F.v.M., seen, but it occurs at a point about 30 miles north of Parkes and 8 miles east of Peak Hill, which is probably its most southern locality in the western district.

The total number of Eucalypts noticed between Mount Hope and Parkes was fifteen, viz.:—*E. populifolia*, *E. intertexta*, *E. oleosa*, *E. dumosa*, *E. viridis*, *E. tereticornis* (scarce), *E. tereticornis*, var. *dealbata*, *E. Woollsiana*, *E. rostrata* (only on creeks and the Lachlan), *E. melliodora*, *E. conica* (only in the eastern part), *E. largiflorens* (on the Lachlan only), *E. sideroxylon*, *E. hemiphloia*, var. *albens* (only close to Parkes), and the Ironbark Box.

The Acacias were represented by *A. homalophylla*, *A. pendula* (not plentiful), *A. decora*, *A. hakeoides*, *A. dealbata* (green variety), *A. colletioides*, *A. triptera*, *A. aneura* (in the western half only), *A. excelsa* (scarce), *A. Oswaldi*, *A. doratoxylon*, *A. Burkittii* (in the western half only), *A. calamifolia* (in the western half only), *A. amblygona* (scarce), *A. conferta*, *A. implexa* (scarce), *A. salicina* (on the Lachlan only), and *A. spectabilis* (close to Parkes).

The Casuarinas were:—*C. quadrivalvis*, *C. Luehmanni*, and *C. Cambagei*.

EXPLANATION OF PLATES.

Plate xx.

Fig. 1.—*Capparis Mitchelli*, Lindl. (Wild Orange), Cobar, N.S.W.
Fig. 2.—*Flindersia maculosa*, F.v.M. (Leopard-tree), Bourke, N.S.W.

Plate xxi.

Fig. 3.—*Eucalyptus microtheca*, F.v.M. (Coolabah), Bourke, N.S.W.
Fig. 4.—*Atalaya hemiglauca*, F.v.M. (Whitewood), Bourke, N.S.W.